

ABSTRACT OF THE DISCLOSURE

Transgenes for producing recombinant polypeptides transgenic bovine species. A transgene for producing recombinant polypeptides in the milk of transgenic bovine species comprises at least one expression regulation sequence, a secretory DNA sequence encoding a secretory signal sequence which is functional in mammary secretory cells of the bovine species and a recombinant DNA sequence encoding the recombinant polypeptide. Also included are methods for producing transgenic bovine species. The method includes introducing the above transgene into an embryonal target cell of a bovine species, transplanting the transgenic embryonic target cell formed thereby into a recipient bovine parent and identifying at least one female offspring which is capable of producing the recombinant polypeptide in its milk. The invention also includes transgenic bovine species capable of producing recombinant polypeptides in transgenic milk as well as the milk from such transgenic bovine species and food formulations containing one or more recombinant polypeptide. Methods are also provided for producing transgenic non-human mammals having a desirable phenotype. The method comprises first methylating a transgene followed by introduction into fertilized oocytes. The oocytes are then cultured to form pre-implantation embryos. Thereafter, at least one cell is removed from each of the pre-implantation embryos and the DNA digested with a restriction endonuclease capable of cleaving the methylated transgene but incapable of cleaving the unmethylated form of the transgene. Those pre-implantation embryos which have integrated the transgene contain DNA which is resistant to cleavage by the restriction endonuclease in the region containing the transgene.